

**WHAT IS CLAIMED IS**

- c) 1354X
1. A purified polynucleotide comprising a nucleic acid sequence encoding the polypeptide having the sequence substantially as depicted in SEQ ID NO:3 or a biologically active fragment thereof.
  2. The polynucleotide of Claim 1 wherein the polynucleotide sequence comprises the sequence substantially as depicted in SEQ ID NO:2.
  3. An expression vector comprising the polynucleotide of Claim 1.
  4. An antisense molecule comprising the complement of the polynucleotide of Claim 2 or a biologically effective portion thereof.
  5. A host cell transformed with the expression vector of Claim 3.
  6. A purified polypeptide comprising the amino acid sequence substantially as depicted in SEQ ID NO:3.
  7. An antibody specific for the polypeptide of Claim 6.
  8. A method for producing cells which express a biologically active polypeptide substantially as depicted in SEQ ID NO:3, said method comprising
    - a) culturing a host cell according to Claim 5 under conditions suitable for the expression of said polypeptide.
  9. A method for producing a polypeptide having the amino acid sequence substantially as depicted in SEQ ID NO:3, said method comprising the steps of:

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- a) culturing a host cell according to Claim 5 under conditions suitable for the expression of said polypeptide, and
  - b) recovering said polypeptide from the host cell culture.

10. A method of identifying compounds that modulate the biological activity of a potassium channel, comprising:

- 10 (a) combining a candidate compound modulator of biological activity with a potassium channel polypeptide having the sequence substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on the biological activity.

15 11. A method of identifying compounds that modulate the biological activity of a potassium channel comprising:

- (a) combining a candidate compound modulator of a potassium channel biological activity with a host-cell expressing a potassium channel polypeptide having the sequence substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on the biological activity.

12. A method of identifying compounds that modulate neurophysiology, comprising:

- 25 (a) combining a candidate compound modulator of neurophysiology with a polypeptide of a potassium channel having the sequence substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on a biological activity of the
- 30 potassium channel.

13. A method of identifying compounds that modulate neurophysiology, comprising:
- 5    (a) combining a candidate compound modulator of neurophysiology with a host-cell  
         expressing a polypeptide of a potassium channel having the sequence substantially as  
         depicted in SEQ ID NO:3, and
- 10    (b) measuring an effect of the candidate compound modulator on a biological activity of the  
         potassium channel.
14. A compound that modulates the biological activity of a human potassium channel  
       identified by the method of Claim 10.
- 15    15. A compound that modulates the biological activity of a human potassium channel  
       identified by the method of Claim 11.
16. A compound that modulates neurophysiology identified by the method of Claim 12.
- 20    17. A compound that modulates neurophysiology identified by the method of  
         Claim 13.
18. A pharmaceutical composition comprising a compound that modulates the biological  
       activity of a human potassium channel according to Claim 14.
- 25    19. A pharmaceutical composition comprising a compound that modulates the biological  
       activity of a human potassium channel according to Claim 15.
20. A pharmaceutical composition comprising a compound that modulates neurophysiology  
30    according to Claim 16.

21. A pharmaceutical composition comprising a compound that modulates neurophysiology according to Claim 17.
- 5    22. A method of treatment of a patient in need of such treatment for a condition which is mediated by the biological activity of a human potassium channel, comprising administration of a modulating compound according to Claim 14.
- 10    23. A method of treatment of a patient in need of such treatment for a condition which is mediated by the biological activity of a human potassium channel, comprising administration of a modulating compound according to Claim 15.
- 15    24. A method of treatment of a patient in need of such treatment for a condition which is mediated by neurophysiology, comprising administration of a modulating compound according to Claim 16.
- 20    25. A method of treatment of a patient in need of such treatment for a condition which is mediated by neurophysiology, comprising administration of a modulating compound according to Claim 17.
26. A method for inhibiting the expression of a potassium channel in a cell comprising administering an effective amount of an antisense molecule according to Claim 4 to said cell.
- 25    27. A method for modulating the neurophysiology of a cell comprising administering an effective amount of an antisense molecule according to Claim 4 to said cell.
- 30    28. A diagnostic composition for the identification of a polypeptide sequence comprising the amino acid sequence substantially as depicted in SEQ ID NO:3, comprising the antibody of Claim 7.

29. A diagnostic composition for the identification of a polynucleotide sequence comprising the sequence substantially as depicted in SEQ ID NO:2 or a fragment indicative thereof, comprising PCR primers derived from SEQ ID NO:1.

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30. A diagnostic composition for the identification of a polynucleotide sequence comprising the sequence substantially as depicted in SEQ ID NO:4 or a fragment indicative thereof, comprising PCR primers derived from SEQ ID NO:4.